Measuring HIV/STD risk in populations: Results of a pilot telephone survey conducted in 2 states in 2001

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Introduction. Measuring behaviors, knowledge, beliefs and attitudes related to the transmission of HIV and sexually transmitted disease (STD) in population groups is important for effective prevention programs. The advantages of telephone survey methods for assessing HIV/STD related behaviors include lower costs compared with other modes, and the possibility of better quality control possible with centralized survey administration (1-4). The performance of telephone survey methods in collecting highly sensitive data of the type needed by HIV prevention programs has not been assessed.

In this paper we report on a pilot telephone survey conducted in 2001 in two states. This survey was the second part of a two-year project to evaluate the effectiveness of telephone survey methods. In the first year a pre-test survey was conducted in a high STD neighborhood in Baltimore, Maryland (5). In addition to having a larger sample, the second year pilot survey added two additional features: First, the geographic scope of the survey was broadened to include a metropolitan area with a medium-level of risk (Columbia, SC Metropolitan Statistical Area), and a lower risk state-wide area (the state of Ohio). Second, we used additional procedures to enhance response rates, including sending lead letters to sample members for whom we could obtain an address match to their phone number.

Both the first and second phase surveys made use of a set of recommended questionnaire items developed by a National Center for HIV, STD and TB Prevention working group to provide comparable measurements across a variety of data systems. These questions were developed through a process of literature search, external review and cognitive testing, and constitute an integrated set of questionnaire items that are available for use to other researchers (6). The surveys in both years were designed to test the effectiveness of telephone audio computer-assisted self-interviewing (T-ACASI) methods, through randomized comparisons of the reporting of the most sensitive items between standard interviewer-administered computer-assisted telephone interviews (CATI) and T-ACASI interviews. The overall objectives of the survey were to test the telephone methodology in different settings, and to see how the standardized questions performed in the telephone survey format. Increased reporting of sensitive behaviors has been noted in previous research that compared computer-assisted self-interview methods with face-to-face interviews (7-9). The goal of this study was to see if increased reporting of sensitive sex and drug behavior items was achieved using the computer assisted telephone-ACASI method compared to the standard interviewer-administered telephone interviews. A secondary goal was to assess several new methodologies that were used in the second year survey to achieve better survey response rates than were obtained in the first year.

Methods. The survey used standard random-digit-dial (RDD) telephone survey sampling methods. A total of 713 interviews were obtained between July 16 and October 7, 2001, including 325 in the Columbia, SC, metropolitan area and 388 in a statewide sample of Ohio. The pretest survey was conducted in Baltimore in 2000 using a similar questionnaire and obtained 203 interviews.

The questionnaire contained items in a number of categories: demographic characteristics, HIV knowledge and attitudes, HIV stigma, HIV testing, TB knowledge and attitudes. The most sensitive items about sex and drug use behavior were at the end of the interview. The first part of the interview was conducted using standard CATI methods for all respondents. For the second part of the interview which contained the most sensitive questions, respondents were randomized into two groups. Half the sample continued to be interviewed using CATI, the other half with T-ACASI. Under T-ACASI respondents listened to recordings of the questions and responded using the telephone keypad without interaction with a live interviewer. We have examined overall survey response rates, and response rates by mode, including item non-response, and compare reporting of sensitive behaviors by mode of interview. The results are unweighted, and standard formulas were used for computing standard errors and tests of statistical significance.

Results.

Response rates. We computed the standard measure of overall survey response rate, or CASRO rate, originally proposed by the Council of American Survey Research Organizations (10). The CASRO response rates for the surveys in the 2 areas were 27.7 in Ohio and 30.0 in Columbia, SC. This does not represent an improvement over the 29.6 obtained in the first year (Table 1). Another standard measure of the survey response, the

Table 1
2001 Telephone Survey of Risk Behavior - Response rates and comparisons

	CASRO Rate	Cooperation Rate
Ohio	27.7	51.7
Columbia, SC	30.0	60.2
2000 Pretest, Baltimore	29.6	52.2
1999 BRFSS (range)	36.2-80.8	38.4-83.9

cooperation rate, defined as the percentage of identified eligible respondents who completed an interview (10) was 51.7 and 60.8 for the two areas, less than the goal of 80 percent which had been set for the survey. Note that this is in the middle of the range for the Behavioral Risk Factor Surveillance System, a series of state-level surveys (11) which do not include sensitive sexual and drug use questions. Refusal was the most common cause of non-participation in the survey, accounting for 1424 final dispositions for 3148 identified households. The difficulty in obtaining acceptable response rates with this survey may be related to declining rates among all random-digit-dialed (RDD) telephone surveys (12), but is also almost certainly related to the very sensitive nature of the subject matter, which is communicated to the respondents before they are asked to participate. Some of the language of the contact script is shown here:

2001 TSORB2 – Telephone Contact Scripts

We are collecting information about the best way to ask questions about risk behaviors related to the transmission of HIV, the virus that causes AIDS, and other sexually transmitted diseases, or STDs...
Your participation is voluntary and all information will be treated in a confidential manner....

Some of the questions we ask are very personal in nature-you may skip any specific question you don't want to answer. The interview will take approximately 20 minutes.

Response rates by advance letter. The sending of lead letters has been found to improve response rates on telephone surveys in some settings (12-15). Of the selected phone number in this survey, approximately one-half had matching mailing addresses and were sent advance letters. This letter was an attempt to establish the legitimacy of the survey so that respondents were more inclined to participate later when they were called. The letter contained language describing the sensitive nature of the interview, so it was not clear whether receiving letters would help or hurt response rates. Phone numbers that were sent letters had a statistically significantly higher CASRO response rate, 32.3% compared with 23.7% for those to which letters were not sent. This is not a controlled experiment because the phone numbers that matched with addresses were not a random sample of all phone numbers. The results at least strongly suggest that the letters did not seriously prejudice potential respondents against participating, and may have helped to some extent.

Table 2
2001 Telephone Survey of Risk Behavior
***Respondent's self-assessed* interview comfort level and truthfulness by mode**

Mode	State of Ohio	Columbia, SC
Percent very/somewhat comfortable with interview		
CATI	89.0	95.8*
T-ACASI	90.5	86.6
Percent reporting answers to be very accurate		
CATI	95.0	91.1
T-ACASI	97.0	91.0

* $p<.05$

Table 3
2001 Telephone Survey of Risk Behavior – Interview time by mode (minutes)

	CATI	T-ACASI	Difference	p-value
Section 1 (All CATI)	2.02	2.47	-.45	p<.001
Section 2 (CATI or T-ACASI)	9.58	6.39	3.19	p<.001
Section 1 & 2	11.27	8.86	2.74	p<.001

Response rates by mode. In Ohio (but not South Carolina), the cooperation rates were somewhat higher for respondents who were interviewed by T-ACASI (56.9% versus 46.3% for CATI only interviews, p<.05). *This suggests that the effects of T-ACASI will vary by location. Lower cooperation rates of T-ACASI compared to other interviews* is probably due to respondents who hung up or were otherwise disconnected during the T-ACASI phase of the interview, and the difficulty of re-establishing the interview.

Respondent comfort and honesty by mode of interview. Two items were contained on the questionnaire as measures of respondent's own assessment of the survey process. One asked how comfortable they felt answering questions about very private issues, and the other requested their self-assessment of the accuracy of their reports concerning these questions. In response to these questions, respondents reported very high levels of comfort and honesty on the survey. In both locations and under both interview modes over 90 percent of respondents characterized the responses as very accurate. In South Carolina a statistically significant difference was obtained: a higher percentage felt very comfortable or somewhat comfortable using the interviewer-administered CATI method only than those who answered the sensitive items using T-ACASI (Table 2). The T-ACASI method, then, which was designed to enhance respondents' sense of privacy and comfort, was associated with a lower level of comfort, possibly because of the use of unfamiliar technology.

Time of interview by mode. Interviews which were conducted using the T-ACASI method to administer the last part of the interview took significantly less time to conduct than the CATI-only interview (Table 3). The T-ACASI interviews took slightly longer for that portion of the interview in which both modes used CATI methods *(2.47 minutes compared to 2.02)*. *For the second section of the interview in which the two methods are compared, the T-ACASI* interviews took 3.19 minutes less for administering *compared with the CATI interviews.* This represents a substantial savings of time, which may be related to respondents responding before the question had been completed. This could be considered a beneficial effect of the T-ACASI method, unless it is found to be associated with a lower level of accuracy in reporting.

Reported levels of risk behaviors: CATI vs. T-ACASI. Previous studies of ACASI methods have found higher levels of reporting of sensitive risk behaviors using ACASI compared with *interviewer-administered questions* (7-9). The results of the first year pretest suggested T-ACASI might have similar effects for some sexual behavior items, but not for drug risk behaviors (5). The pilot study found a similar pattern (Table 4). In South Carolina only, persons interviewed with the T-ACASI method reported a statistically significantly higher percentage with 2 or more and 5 or more sex partners in the past year, an effect similar to previous ACASI findings. Because we found this effect in one of the two populations surveyed, but not in the other, it suggests that the kind of effects found in telephone ACASI interviewing may be variable among various populations.

Item non-response by mode. Another item of data quality that was examined was item non-response. Very small numbers refused to answer sensitive items for both the interviewer-administered interviews and those conducted with T-ACASI. Statistically significant differences in the number refusing were found in the Ohio survey: more respondents refused the question on whether they had sex in the past year under CATI administration. Because more respondents refused to answer this question on gender of sex partners under T-ACASI than under interviewer-administered methods, it suggests that computerized interviewing may make it easier *in some cases* for respondents to not answer questions than when interacting with an interviewer. However, overall the numbers refusing to answer sensitive items were small, so that it appears that mode of interview had little to do with item non-response for respondents who reached this point in the interview.

Conclusions. A major finding of the two year study is the difficulty in achieving an adequate response rate with a survey of this type. This is no doubt partly due to trends affecting the response rates of all telephone surveys. An additional factor is the sensitive nature of the subject matter, and the required consent information that is provided to the potential respondent. T-ACASI was associated with a somewhat lower level of completed interviews, but the largest cause of the low response rate was potential respondent refusal to participate.

Table 4
2001 Telephone Survey of Risk Behavior – Selected risk variables by interview mode

	Ohio		South Carolina	
Ever used crack	**Pct**.	**N**	**Pct**.	**N**
CATI	5.0	219	1.2	169
T-ACASI	3.6	169	2.6	156
2+ sex partners in the past year				
CATI	11.9	219	5.3*	169
T-ACASI	9.5	169	17.3	156
5+ partners in the past year				
CATI	1.8	219	0.0*	169
T-ACASI	1.2	169	4.5	156
Any sex or drug risk				
CATI	5.9	219	4.7*	169
T-ACASI	7.7	169	16.0	156

* $p<.05$

The sending of advance letters was associated with a somewhat higher rate of survey participation, but not enough to achieve what might be considered to be an acceptable response rate . It is clear that other methods are needed to obtain population-based information of the type collected by this survey. One possibility is the use of incentives for participating in the interview, which poses some difficulties for telephone surveys, but has been found to have a positive effect on response rates (16,17).

The T-ACASI mode of administering was accepted very well by nearly all the respondents who were interviewed using this method. A number of possible effects of T-ACASI were noted. It was associated with a somewhat lower response rates in one area, possibly related to break-offs and difficulty re-establishing the interview. In one of the two areas, T-ACASI was associated with a lower comfort level, although for all respondents a high level of comfort was reported for both modes. T-ACASI was associated with a much shorter duration of interview, a potentially positive effect of computer administration if it can be shown that there was no negative effect on data quality.

T-ACASI was not associated with much greater refusal to answer specific questionnaire items, although there were differences in one of the two geographic areas. T-ACASI also was associated with higher reporting of number of sex partners in the past year in one area. From this it could be concluded that the effects of T-ACASI on increasing the reporting of some sensitive items that has been noted in previous studies, are likely to vary across population groups and geographic areas.

A conclusion of this research may be that random-digit-dialed surveys of general population groups may have limited usefulness for measuring sex and drug-related HIV and STD risk factors. It may be best for general population surveys to concentrate on the measurement of items related to HIV prevention that are less sensitive (such as knowledge of available treatments, HIV testing experience). It will be necessary to develop strategies for measuring risk behaviors in populations using methods that target high-risk groups.

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